Appendix I

Wildlife Survey and Inventory – Robb-Ledford Wildlife Management Area: 2009

To address some of the uncertainties of non-game use of Montana Fish, Wildlife and Parks', Wildlife Management Areas, and in an effort to be more comprehensive in our management of wildlife species including non-game as well and game species, we intend to conduct rigorous monitoring and develop a statistically sound sampling plan for Robb-Ledford and Blacktail WMA's.

The evaluation of the area, commencing summer 2009 with a pilot study, and continuing through 2012, will focus on small mammals, songbirds, raptors, and amphibian and aquatic reptile surveys. The sampling design for the surveys has been developed through collaboration between the native species biologist for Region 3, the statewide biometrician, and the non-game data manager and will involve stratifying the WMA's by habitat (primary strata) which will be further embedded within the grazing treatment (secondary strata; early season grazed, late season grazed, and rested). This will be conducted to reach two main objectives; (i) to more comprehensively document species occupancy of these WMA's at the landscape level and (ii) evaluate species occupancy and diversity between habitats and between grazing treatments and determine if/how this changes throughout a grazing cycle (3 years). All surveys and monitoring will follow the same sampling protocol that has been developed and intensively employed by Montana Natural Heritage Biodiversity Monitoring Program. After a pilot year in 2009 it will be determined if there are adequate resources to conduct surveys for long-billed curlew, sage grouse, waterfowl, and furbearers (beavers). More intensive sampling is also intended for Robb Creek and Ledford Creek to assess the value of these riparian areas for wildlife. This work will help the agency determine if and how the landscape level grazing practice influences non-game wildlife, and, if this management approach should be manipulated in the future to enhance species use of the WMA's. The results of this investigation will also help managers to determine if grazing could be modified to achieve different habitat goals and objectives within the WMA's, i.e. if the grazing practices could be modified in areas where sensitive species are known to occur. All information on species distribution and occurrence will be sent to the Montana Natural Heritage Program to be integrated into their statewide biodiversity-monitoring database.

2009 Season

Small mammal trapping:

Small mammal trapping was conducted in 2 of the 3 low elevation pastures (Battle Place and Robb Creek) and 1 of 3 high elevation pastures (Upper Ledford Ridge). In the Battle Place 3 of the main habitat types were selected for initial inventory (smooth brome pasture, dry grassland, and riparian) with similar, and thus comparable, habitat types being selected in the Robb Creek Pasture (moist native grassland, dry grassland, and riparian). In the Upper Ledford Ridge pasture trapping occurred in the conifer draws, aspen, wet meadow, and low elevation sagebrush habitats. Trapping occurred using the Natural Heritage Biodiversity monitoring protocol with three replicate transects being selected per habitat type (transect location shown in Figure 1). Transects included 3 different trap types (Sherman live traps, museum special mousetrap, and small Victor mousetrap) to ensure that a diversity of species would be captured (preliminary species list for the Robb-Ledford WMA can be seen in table 1). Each transect was comprised of a 100m line with 2 live traps and each of the snap traps placed at 10m intervals. Trapping occurred for 3 nights at each site. Trapping was conducted this pilot year to evaluate presence/absence. A total of 594, 594, 176 trap nights (1 trap/1 night) were conducted in the Battle Place, Robb Creek, and Upper Ledford Ridge pastures respectively. Analyses will be conducted early winter 2009 in collaboration with the statewide Fish, Wildlife and Parks biometrician using the statistical package "MARK" and/or "PRESENCE". This sampling design will be enhanced during future years so that capture-mark-recapture techniques can be used to estimate abundance, it will also be expanded to include other pastures within the WMA (Dry Hollow pasture). The sampling design will also be developed to incorporate grazing treatment (rested, early grazed, and late grazed) as an additional covariate to habitat. Un-grazed sites will also be evaluated and used as our control.

Songbird and raptor surveys:

Preliminary reconnaissance of species occupancy and diversity was conducted during the 2009 pilot season (preliminary species list for the Robb-Ledford WMA can be seen in table 2). Methods to incorporate a more rigorous and statistically sound sampling design will be conducted in future years whereby the WMA will be stratified by habitat and further stratified by grazing treatment (rested, early grazed, and late grazed) and will be surveyed using songbird point transects following the Natural Heritage Biodiversity monitoring protocol. To complement the small mammal trapping analyses we will work with the statewide biometrician to develop randomly selected raptor routes throughout the WMA. During the 2009 season all identified raptor nests were inventoried and activity, occupancy and production of these known nests will be monitored in future years.

Mammal inventory:

Preliminary reconnaissance of species occupancy and diversity was conducted during the 2009 pilot season (preliminary species list for the Robb-Ledford WMA can be seen in table 2). Methods to incorporate a more rigorous and statistically sound sampling design

will be conducted in future years. This will also include survey and inventory for bats using mist nets and/or bat detectors.

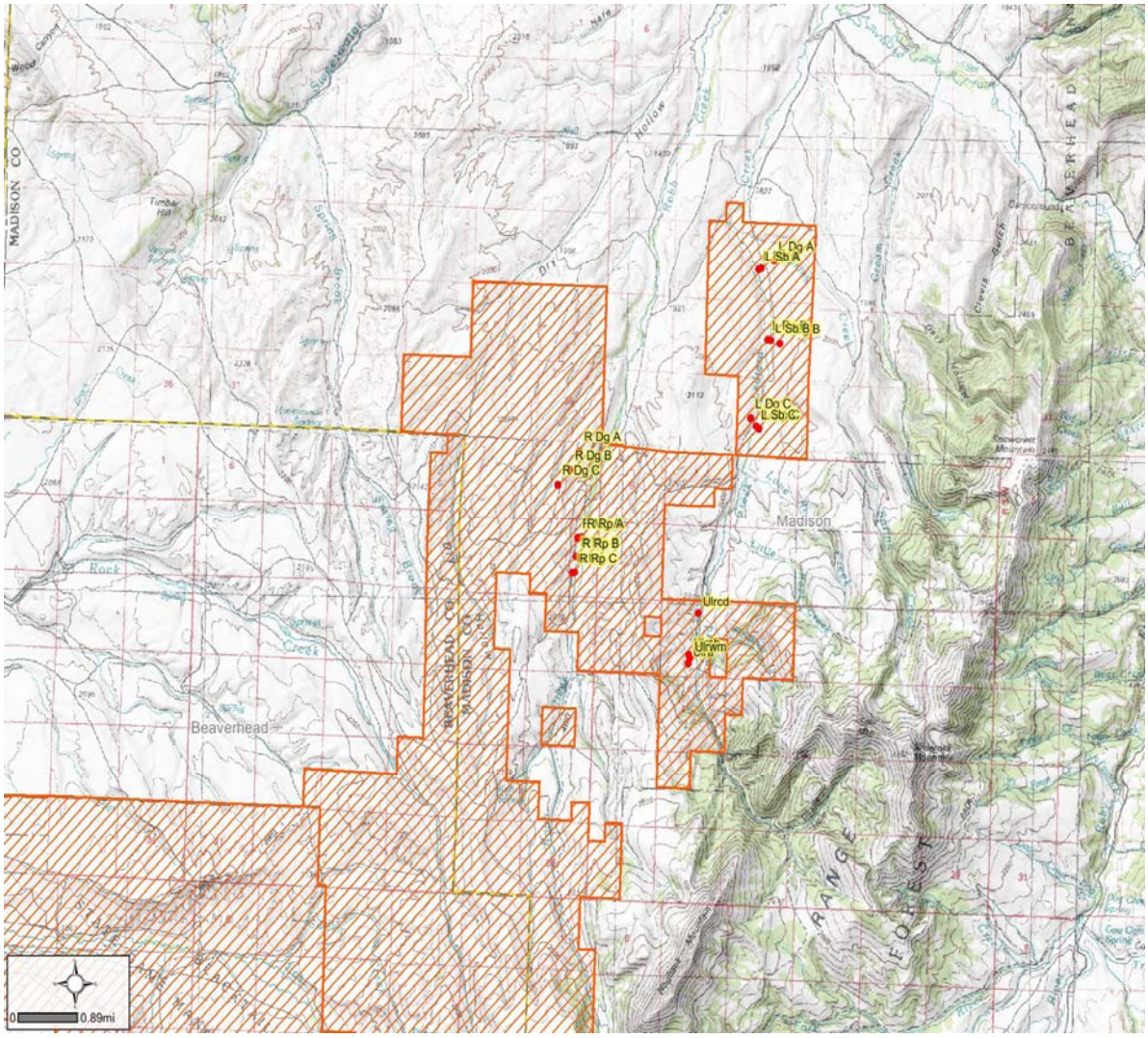
Hepetofauna inventory:

No inventory of amphibians and reptiles was conducted during the 2009 pilot year, however systematic sampling of the main creeks (Robb Creek and Ledford Creek) will be conducted in future years. Methods to incorporate a more rigorous and statistically sound sampling design will be developed by the native species biologist for region 3 and the statewide biometrician. Sampling protocol will follow that of the Montana Natural Heritage Program biodiversity monitoring program.

Beaver surveys – Ledford Creek and Robb Creek

Entire censuses of the two main creeks were inventoried for beaver activity during the summer 2009. Censuses were conducted by walking the entire creek bottom and their tributaries. Ledford Creek was inventoried from the northern most boundary of the Battle Field to the forest service boundary on the southern end of the WMA (~5 miles of creek). The section of creek leased by Turner enterprises was not surveyed this year due to the area being occupied by bison – this area will be surveyed spring 2010. Robb Creek was inventoried from the northern most boundary of Robb Creek Pasture to the confluence with Kelly springs tributary (~ 5 miles of creek). Beaver activity was recorded as "historic" or "current". Historic represented beaver lodges and dams that were no longer active. Current activity represented lodges or dams that were currently being used. These data will be analyzed winter 2009 to try and generate some density estimate for beaver based on the intensity of current activity. Maps will be generated to describe beaver use in 2009; these sites will be revisited and surveyed in an identical manner in 2-3 year intervals.

Figure 1. Location of small mammal trapping transects



Mammal Species		Mammal Species
Badger		Squirrel - Red
Bear - black		Vole - Meadow*
Beaver		Vole - Sagebrush*
Bobcat		Vole - Southern red backed*
Bushy-tailed woodrat		Vole - Water*
Chipmunk - Yellow pine		Weasel - Long-tailed
Cottontail Rabbit - Mountain		Yellow Pine Chipmunk
Coyote		
Deer - Mule		
Deer - White-tailed		
Gray wolf**		
Ground squirrel - Columbian		
Ground squirrel - Uinta		
Jack Rabbit - Black-tailed		
Moose		
Mouse - Deer*		
Mouse - Northern grasshopper*		
Mouse - Western jumping*		
Pronghorn Antelope		
Shrew - Dusky*		
Shrew - Masked*		
Shrew - Northern Water*		
Shrew - Pygmy*		
Skunk - Striped		
Opportunistic sightings		
*Inventoried through systematic trapping		
** Tracks		

Table 1. Preliminary Mammal species list, Robb-Ledford Wildlife Management Area, summer 2009

Bird Species		Bird Species		Bird Species
American Dipper		Hermit Thrush		Sparrow - White Crowned
American Goldfinch		Horned Lark		Swallow – Cliff*
American Robin		Kestrel*		Swallow – Barn*
Belted Kingfisher		Kingbird - Eastern		Swallow – Tree*
Black- Billed Magpie		Kingbird - Western		Swallow - Violet Green*
Bluebird – Mountain*		Kinglet - Ruby crowned		Swift - White Throated
Brewer's Blackbird		Mallard*		Teal - Green Winged*
Bunting – Lazuli		Meadowlark - Western		Vireo – warbling
Calliope hummingbird		Merganser - common		Vireo (unk Sp)
Chickadee - Mountain		Nighthawk		Warbler – Yellow*
Chickadee - Black capped		Northern Flicker		Warbler - Yellow Rumped
Dark Eyed Junco		Nuthatch - Red-Breasted		Western Wood Pee Wee
Eagle – Bald		Owl - Great Horned*		Woodpecker - Hairy
Eagle – Golden*		Partridge – Hungarian*		Wren – House
European Starling		Raven		Wren – Rock
Falcon – Prairie*		Rock Dove		
Flycatcher – Olive sided		Sage Thrasher		
Flycatcher – Willow		Sandhill Crane		
Great Blue Heron		Sandpiper – Spotted		
Grosbeak – Black headed		Snipe – Wilson's*		
Grouse – Blue		Sparrow – Brewers*		
Harrier*		Sparrow - Chipping		
Hawk – Ferruginous*		Sparrow - Clay Colored		
Hawk - Red tailed		Sparrow - Song		
Hawk - Swanson's		Sparrow - Vesper		
*Known to be breeding				

Table 2. Preliminary bird species list, Robb-Ledford Wildlife Management Area, summer 2009.